DOCUMENT RESUME

ED 260 944 SE 045 985

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TITLE	A Tool for Assessing and Revising the Science Curriculum. Revised Edition.
INSTITUTION	Iowa State Dept. of Public Instruction, Des Moines.
REPORT NO	4200-E56075-3/84
PUB DATE	Mar 85
NOTE	33p.; Supersedes ED 230 420 (1982 edition).
PUB TYPE	Guides - General (050) -- Tests/Evaluation Instruments (160)
EDRS PRICE	MF01/PC02 Plus Postage.
DESCRIPTORS	Biology; Chemistry; Curriculum Development; *Curriculum Evaluation; Earth Science; *Educational Assessment; *Educational Objectives; Educational Philosophy; Elementary School Science; Elementary Secondary Education; *Evaluation Methods; Physics; Process Education; *Science Curriculum; *Science Education; Science Programs; Secondary School Science
IDENTIFIERS	*Iowa

ABSTRACT

This document was developed to encourage and aid local schools in the assessment of their science curricula on a continuous basis. It provides: (1) a 21-step implementation schedule for conducting a science curriculum assessment and/or revision; (2) a model for assisting schools in developing their science philosophy, goals, and topics; (3) recommendations for levels at which suggested topics are introduced, reinforced, and emphasized; (4) an instrument for matching local science curriculum needs to available science programs; and (5) instructions for using the cloze procedure to determine whether or not students can read and comprehend science materials. (JN)

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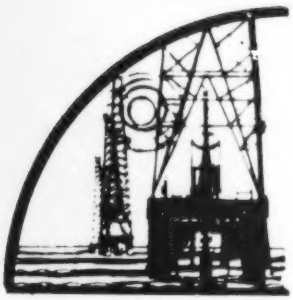
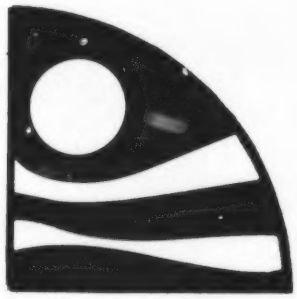


A Tool for ASSESSING and REVISING the SCIENCE CURRICULUM



Iowa Department of Public Instruction

Revised Edition

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Revised Edition

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The Department of Public Instruction would also like to thank the 200 Iowa school districts and approximately 3,500 elementary and secondary teachers of science who assisted in developing and refining this tool during the 1978-83 academic years.

This tool was jointly developed by the Iowa Department of Public Instruction (DPI) and a committee of the Iowa Council of Science Supervisors (CS^2) to encourage and aid local schools in the assessment of their science curricula on a <u>continuous</u> basis. It provides:

- a implementation schedule for conducting a science curriculum assessment and/or revision

- a model for assisting schools in developing their science philosophy, goals, and topics
- recommendations for levels at which suggested topics are introduced, reinforced and emphasized
- an instrument for matching local science curriculum needs to available science programs

Implementation Schedule (Summary)

Conducting a complete assessment, and revision, of the science curriculum is a time-consuming process. The utilization of this instrument for this process generally requires 16-30 hours with the development committee.

		Completion Date
1.	Select science curriculum committee	
2.	Schedule time and budget for curriculum work	
3.	Discuss current trends in science education	
4.	Review Iowa Code (page 12)	
*5.	Develop a philosophy of science teaching (page 14) and modify subgoals (page 15): Get feedback from staff and revise.	
*6.	Develop DESIRED topics: Get feedback from staff and revise (pages 15-23)	
*7.	Decide on placement of DESIRED topics: Get feedback from staff and revise (pages 15-23)	
*8.	Assess CURRENT topics: Get feedback from staff and revise (pages 15-23)	
*9.	Assess differences between DESIRED and CURRENT topics.	
*10.	Decide on level of revision required	
11.	Assess physical facilities and recommend changes	
12.	Match curriculum needs to available curriculum materials	
13.	Present curriculum materials, under consideration, to staff	
14.	Assess readability of materials under consideration.	

		Completion Date
15.	Visit other schools, utilizing materials being considered	_____
16.	Pilot curriculum materials in select classes	_____
17.	Notify administration of materials to be selected	_____
18.	Provide teacher inservice of materials selected	_____
19.	Evaluate new science curriculum	_____
20.	Assess student achievement	_____
21.	Arrange for regular curriculum review	_____

* These steps represent the core of the assessment process and may require separate meetings of 2-4 hours each

Implementation Schedule

It is important that all steps contained within this schedule are closely followed in the order in which they appear.

1. Select Science Curriculum Committee

Completion Date _____

Establish a science curriculum committee with representatives from each of these areas:

Administration (principal, assistant superintendent, curriculum specialist, etc.)

Science teachers K-12 with all buildings and grade levels represented

Outside consultant (area education agency, college/university, DPI, etc.)

Others (counselors, school nurse, lay person, minority representation according to the Code of Iowa 257.25(11), 670-3.5(257), etc.)

_____

2. Schedule Time And Budget Finances For Curriculum Work

Schedule time and finances during the school year for curriculum planning, development, implementation, and evaluation.

_____

3. Discuss Current Trends In Science Education

Arrangements should be made for a knowledgeable consultant to speak with the committee concerning contemporary trends and problems in science education as they relate to the local district.

_____

Completion Date

4. Review Iowa Code

The science curriculum committee should conduct a careful review of the Iowa Code (page 11 of this document) as it applies to the local district. _____

5. Develop A Philosophy Of Science Teaching: Feedback And Revision

Using the sample philosophy statement provided (page 10 of this document), the science curriculum committee should develop a local written philosophy of science education specific to local needs. The comprehensive nature of science and its essential purpose in developing scientific literacy in all students should be a major feature of the statement. The science curriculum committee should modify the suggested subgoals provided in the tool (page 13 of this document) to assure consistency within the local philosophy. To assure emphasis, subgoals, should be included as an integral component of the philosophy. This philosophy statement should be duplicated and sent to the entire staff for reactions, additions, deletions, and corrections. _____

6. Develop Desired Topics: Feedback And Revision

Completion Date _____

The science curriculum committee should develop their DESIRED topics by reacting to the concensus list (pages 14-22). The topics provided, represent the CONSENSUS of opinion from 3500 science educators in a diversity of K-12 science settings and assure consistency with the goals developed in Step No. 5 and a balance of life, earth and physical science subjects. Topics may be added, deleted or restated as appropriate. At this point, the list of topics should be duplicated and sent to the entire science staff for additions, deletions, reactions, and corrections. Teachers' written comments, concerning the topics should be encouraged.

_____

7. Place And Assess Desired Topics: Feedback And Revision

The science curriculum committee should use the CONSENSUS list (pages 14-22) in deciding the grade level and degree to which each topic is to be stressed for each grade level. Teachers should mentally place themselves in teaching settings with unlimited resources, motivated students, and supportive administration and colleagues. The scale on page 13 should be used in deciding the level of stress each topic should receive for each grade level. At this point, the suggested modifications should be duplicated and sent to the entire staff for reactions and corrections. Teachers should react to only those topics which are specific to their teaching assignment. If teachers disagree with the placement of topics, appropriate alterations should be made. Examples of desired programs may be drawn from the National Science Teachers Association "Search for Excellence in Science Education" (SESE) criteria.

_____

8. Assess Current Topics: Feedback And Revision

Completion Date _____

Using the Likert Scale on page 13, the curriculum committee should have teachers assess the degree to which each topic is stressed in the CURRENT science program (pages 14-22). Each teacher of science should decide the degree to which each topic is emphasized in his/her grade level or course only. Appropriate numbers should be placed below the grade level for which they are responsible. Teachers written comments concerning placement of the topics in their present science program, should be encouraged.

_____

9. Assess Differences Between Desired And Current Topics

As this curriculum committee is the decision-making body responsible for the ultimate refinement and placement of the science topics they must assess all input from consultants and colleagues in identifying the differences between the desired and the current topics (pages 14-22). The differences are found by subtracting the DESIRED values from the CURRENT values and placing this number in the boxes labeled differences.

_____

10. Decide On Level Of Revision Required

Completion Date _____

If numerous inconsistencies are identified between the DESIRED and the CURRENT curriculum, the science curriculum committee should recommend a major revision. If only isolated inconsistencies are identified, the committee may explore supplements to these areas only. Individual teachers should be encouraged to improve areas of weakness specific to their grade level or course.

_____

11. Assess Physical Facilities And Recommend Changes

A thorough assessment of the physical plant and facilities should be conducted, as these may limit the types of programs being considered. (Refer to Recommended Guidelines for Sites, Facilities, and Equipment -references)

_____

12. Match Curriculum Needs With Available Curriculum Materials

A comparison of local science curriculum needs with those of available programs should be conducted. (Refer to "Matching Local Science Curriculum Needs to Available Science Programs" - appendix) Area Education Agency, Department of Public Instruction, college/university consultants and media services may be of assistance. If no program receives at least 60 points, the curriculum committee should recommend that science teachers develop their own science curriculum materials.

_____

13. Present To Science Staff Several Possible Programs

Completion Date _____

The science curriculum committee should arrange to present to the science staff the two or three programs whose philosophy, goals, and topics most closely parallel those developed by thelocal staff. Department of Public Instruction,area education agency, or college/university consultants may provide assistance. _____

14. Assess The Readability Of Materials

Using the CLOZE system provided in the appendix, the science curriculum committee should assess the readability of the two or three programs under consideration. Such information may help staff decide which program to adopt. _____

15. Visit Other Schools

The science curriculum committee should be encouraged to visit a school, of similar size, which is currently utilizing the science program being considered for adoption. _____

16. Pilot Possible Programs - By Selected Teachers

The science curriculum committee should pilot science materials from one or more of the programs being considered for adoption, in one or two classes prior to district adoption. _____

17. Notification To Administration

Completion Date _____

The science curriculum committee should inform appropriate administrators and/or school board members of the assessment and revision procedures and resultant materials selected.

_____

18. Provide Teacher Inservice Of Materials Selected

_____

19. Evaluate Program

In order to assess improvement, the science curriculum committee should evaluate the new science program utilizing the Likert Scale (pages 15 - 27 of this document) one year after revision.

_____

20. Assess Student Achievement

Arrange for regular assessment of student achievement (knowledge, creativity, etc.) based upon objectives delineated (Project Measure -AEA 2, Locally developed tests, standardized tests.)

_____

21. Periodic Curriculum Review

The science curriculum committee should schedule regular meetings throughout the school year to discuss pros and cons of the new program and to develop means for strengthening identified weaknesses.

_____ _____

A Philosophy of Science Education

Science is both a series of process skills for problem-solving and a body o' knowledge concerning natural phenomena.

Science education is a profession dedicated to making citizens scientifically literate. This is best accomplished through a wholistic curriculum reflecting experiential learning based upon relevant activities, societal issues and scientific applications of technology. A curriculum designed to foster such scientific literacy must include use of Process Skills of science, mastery of certain Science Content and the ability to use these components in solving personal and societal scientific and technological problems.

The science curriculum and the science staff serve as interpreters of scientific information, theories, and research. As such they serve as the bridge between society (the public) and science (the scientists). They must reflect the nature of science, recent advances in science, and the societal pressures which affect both science and education. They must consider the personal needs of students, technological applications of science and the societal issues of the time as they interpret science education in a manner necessary for a citizenry which is scientifically literate.

Science education is essential in the total educational process. We live in a scientific and technological society: thus, science should occupy a place of prominence in the total curriculum if a school is to reflect current society.

Therefore, every student should receive a sequentially planned science program designed to develop scientific literacy. In addition, we recommend the minimum number of minutes per week allotted to science should be as follows:

1-3:	100 minutes or more/week
4-6:	150 minutes or more/week
7-9:	250 minutes or more/week
10-12:	250 minutes or more/week

Code of Iowa

The Code of Iowa provides minimum curriculum requirements and standards for approved schools (K-12).

MULTICULTURAL, NONSEXIST EDUCATION REQUIREMENT (IOWA SCHOOL STANDARDS)

Pursuant to the authority of section 257.25(11) of the Code of Iowa the following are additions to 670-3.5(257).

The curriculum structure and content, instructional materials, and teaching strategies shall reflect the contributions and perspectives of men and women and diverse racial or ethnic groups to the instructional program. Where sex or cultural-racial stereotyping exists in instructional materials, it shall be brought to the attention of the student and supplementary materials should be used to offset the stereotyping. Multicultural, nonsexist instructional materials shall be adopted at the first opportunity. The curriculum shall include activities which promote an awareness of sexism and cultural-racial bias in the English language.
670-3.5(6)

SECTION 257.25 STATES, WHERE APPLICABLE TO SCIENCE AND HEALTH:

ELEMENTARY LEVEL

257.25(2) Kindergarten level. If a school offers a kindergarten program, the program shall include experiences designed to develop healthy emotional and social habits and growth in the language arts and communication skills, as well as a capacity for the completion of individual tasks, and protection and development of physical being.

257.25(3) Grades one through six. The following areas shall be taught in grades one through six:

SCIENCE, including conservation of natural resources and environmental awareness.

HEALTH AND PHYSICAL EDUCATION, including the effects of alcohol, tobacco, drugs and poisons on the human body; the characteristics of communicable diseases.

JUNIOR HIGH SCHOOL LEVEL

257.25(4) Grades seven and eight. The following shall be taught in grades seven and eight as a minimum program:

SCIENCE, including conservation of natural resources and environmental awareness

HEALTH AND PHYSICAL EDUCATION, including the effects of alcohol, tobacco, drugs, and poisons on the human body, the characteristics of communicable diseases, including veneral diseases and current crucial health issues.

HIGH SCHOOL LEVEL

257.25(6a through 6j) Grades nine, ten, eleven and twelve. The minimum program for grades nine through twelve shall be:

SCIENCE (four units), including physics and chemistry; the units of physics and chemistry may be taught in alternate years

HEALTH EDUCATION, including an awareness of physical and mental health needs, the effects of alcohol, tobacco, drugs and poisons on the human body, the characteristics of communicable diseases, including veneral diseases and current crucial health issues.

280.10 EYE-PROTECTIVE DEVICES. Every student and teacher in any public or nonpublic school shall wear industrial quality eye-protective devices at all times while participating, and while in a room or other enclosed area where others are participating, in any phase or activity of a course which may subject the student or teacher to the risk or hazard of eye injury from the materials or processes used in any of the following courses:

1. Vocational or industrial arts shops or laboratories involving experience with any of the following:

a. Hot molten metals.
b. Milling, sawing, turning, shaping, cutting, grinding or stamping of any solid materials.
c. Heat treatment, tempering or kiln firing of any metal or other materials.
d. Gas or electric arc welding.
e. Repair or servicing of any vehicle while in the shop.
f. Caustic or explosive materials.

2. Chemical or combined chemical-physical laboratories involving caustic or explosive chemicals or hot liquids or solids when risk is involved. Visitors to such shops and laboratories shall be furnished with and required to wear the necessary safety devices while such programs are in progress.

It shall be the duty of the teacher or other person supervising the students in said courses to see that the above requirements are complied with. Any student failing to comply with such requirements may be temporarily suspended from participation in the course and the registration of a student for the course may be canceled for willful, flagrant or repeated failure to observe the above requirements.

The board of directors of each local public school district and the authorities in charge of each nonpublic school shall provide the safety devices required herein. Such devices may be paid for from the general fund, but the board may require students and teachers to pay for the safety devices and shall make them available to students and teachers at no more than the actual cost to the district or school.

"Industrial quality eye-protective devices", as used in this section, means devices meeting American National Standard, Practice for Occupational and Educational Eye and Face Protection promulgated by the American National Standards Institute, Inc.*

Goals and Subgoals

The following goal and subgoals were formulated by the DPI/CS^2 development committee to serve as guidelines in refining local science goals (Step No. 6 on the Implementation Schedule).

Goal (K-12): 1. To develop a scientifically literate society.

Subgoals (K-12):

A. To apply science processes as part of basic learning

B. To communicate knowledge of natural phenomena.

C. To use scientific knowledge and processes, in comprehending the impact of science and technology on the individual, culture, and society.

Topics

The following topics, and their suggested placement in the curriculum were formulated by the DPI/CS^2 development committee, with suggestions from approximately 3,500 Iowa teachers of science, to serve as guidelines for local science curriculum development.

Definition of Symbols (Tables 1 and 2).

SUGGESTED PLACEMENT OF TOPICS IN THE SCIENCE CURRICULUM:
(to be used in interpreting CONCENSUS placement of topics)

I -- Introduce - The first time a topic is presented as a planned portion of the district science curriculum.

E -- Emphasize - The topic to be stressed in at least one unit of instruction.

M -- Reinforce - Review topics introduced or emphasized previously.

N -- Not applicable at this level.

DEGREE TO WHICH THE TOPIC IS STRESSED IN THE SCIENCE CURRICULUM:
(to be used in assessing DESIRED and CURRENT curricula)

INSTRUCTIONAL TIME

None	Little	Some	Quite a Bit	A Great Deal
0	1	2	3	4
	Student is aware of the topic	Student can define the topic	Student can apply the topic to his/her life	Given choices, student can make logical decisions concerning the topic relative to his/her life, society.

STUDENT OUTCOME EXPECTED

TABLE 1 SCIENCE PROCESS SKILLS

Processes Topics	Grade	K	1	2	3	4	5	6	7	8	BIOLOGY	CHEMISTRY	PHYSICS
1. To develop a student's observing skills. (Observing means using the senses to obtain information or data about objects and events.)	Consensus			I			R		R			R	
	Desired												
	Current												
	Differences												
2. To develop a student's classifying skills. (Classifying is the process used to impose order on collections of objects and events to show similarities, differences, and interrelationships.)	Consensus			I			E		E			E	
	Desired												
	Current												
	Differences												
3. To develop a student's measuring skills. (Measuring is the process of using numbers and equipment to quantify observations.)	Consensus			I			E		E			E	
	Desired												
	Current												
	Differences												
4. To develop a student's recording skills. (Recording is the process of logical quantification and manipulation of data.)	Consensus			I			R		E			E	
	Desired												
	Current												
	Differences												
5. To develop a student's exploring skills. (Exploring is the process of looking into new and unknown situations to determine variables involved.	Consensus			I			R		E			E	
	Desired												
	Current												
	Differences												
6. To develop a student's predicting skills. (Predicting is the process of formulating a specific forecast based on observations, measurements and relationships between variables.)	Consensus			I			E		E			E	
	Desired												
	Current												
	Differences												

TABLE 1 SCIENCE PROCESS SKILLS

Processes Topics	Grade	K	1	2	3	4	5	6	7	8	BIOLOGY	CHEMISTRY	PHYSICS
7. To develop a student's inferring skills. (Inferring is the process of using logic to draw conclusions from data.)	Consensus		I				R			E		E	
	Desired												
	Current												
	Differences												
8. To develop a student's hypothesizing skills. (Hypothesizing is the process of formulating testable scientific generalizations.)	Consensus		N				I			R		E	
	Desired												
	Current												
	Differences												
9. To develop a student's investigating skills. (Investigating is the process of applying logical reasoning to solve new or unique problems.)	Consensus		I				E			E		E	
	Desired												
	Current												
	Differences												
10. To develop a student's experimenting skills. (Experimenting is the process of using all the scientific processes in conducting a controlled test of specific scientific hypothesis.)	Consensus		N				I			R		E	
	Desired												
	Current												
	Differences												
	Consensus												
	Desired												
	Current												
	Differences												
	Consensus												
	Desired												
	Current												
	Differences												

TABLE 2 SCIENCE CONTENT AND APPLICATION

Physical Science Topics	Grade	K	1	2	3	4	5	6	7	8	BIOLOGY	CHEMISTRY	PHYSICS
1. Matter/energy relationships	Consensus			I			E		E			E	
	Desired												
	Current												
	Differences												
2. That all matter consists of units.	Consensus			I			E		E			E	
	Desired												
	Current												
	Differences												
3. Fundamental organic chemistry.	Consensus			N			N		N			I	
	Desired												
	Current												
	Differences												
4. Fundamental inorganic chemistry.	Consensus			I			E		E			E	
	Desired												
	Current												
	Differences												
5. The principles of magnetism, electricity, light and sound.	Consensus			N			I		E			E	
	Desired												
	Current												
	Differences												
6. The principles of energy origin, use, and alternatives. (ie hydro, wind, geothermal, nuclear, etc.)	Consensus			I			E		E			E	
	Desired												
	Current												
	Differences												

TABLE 2 SCIENCE CONTENT AND APPLICATION

Physical Science Topics	Grade	K	1	2	3	4	5	6	7	8	BIOLOGY	CHEMISTRY	PHYSICS
7. The principles of atomic theory.	Consensus			N			I		E			E	
	Desired												
	Current												
	Differences												
8. The periodic table.	Consensus			N			N		I			E	
	Desired												
	Current												
	Differences												
9. The functioning of simple machines.	Consensus			I			R		E			E	
	Desired												
	Current												
	Differences												

TABLE 2 SCIENCE CONTENT AND APPLICATIONS

Life Science Topics	Grade	K	1	2	3	4	5	6	7	8	BIOLOGY	CHEMISTRY	PHYSICS
1. The interaction and interdependence of living things with their environment.	Consensus		I				E		E			R	
	Desired												
	Current												
	Differences												
2. That living things are in continuous change evolution.	Consensus		I				E		E			E	
	Desired												
	Current												
	Differences												
3. That living organisms are the products of their heredity and environment.	Consensus		N				I		E			E	
	Desired												
	Current												
	Differences												
4. The personal aspects of physical, mental and community health and safety.	Consensus		I				E		E			E	
	Desired												
	Current												
	Differences												
(Physical Science) 5. The interaction of people with natural ecological systems.	Consensus		I				E		E			E	
	Desired												
	Current												
	Differences												
(Life Science) 6. The characteristics of living organisms.	Consensus		I				R		E			E	
	Desired												
	Current												
	Differences												

Life Science Topics	Grade	K	1	2	3	4	5	6	7	8	BIOLOGY	CHEMISTRY	PHYSICS
7. The cell as the basic unit of living organisms.	Consensus	N				I			E		R		
	Desired												
	Current												
	Differences												
8. The essential role of plants to all living things.	Consensus	I				R			E		E		
	Desired												
	Current												
	Differences												
9. The principles of human anatomy and physiology.	Consensus	N				I			E		E		
	Desired												
	Current												
	Differences												
10. The diversity of living forms.	Consensus	I				R			E		E		
	Desired												
	Current												
	Differences												
	Consensus												
	Desired												
	Current												
	Differences												
	Consensus												
	Desired												
	Current												
	Differences												

TABLE 2 SCIENCE CONTENT AND APPLICATIONS

Earth Science Topics	Grade	K	1	2	3	4	5	6	7	8	BIOLOGY	CHEMISTRY	PHYSICS
1. The dynamic universe and solar system.	Consensus		N				I		E			R	
	Desired												
	Current												
	Differences												
2. The principles of continental drift.	Consensus		N				N		I			E	
	Desired												
	Current												
	Differences												
3. The principles of mineralogy (ie).	Consensus		N				I		E			R	
	Desired												
	Current												
	Differences												
4. The principles of radioactive and physical dating.	Consensus		N				N		I			E	
	Desired												
	Current												
	Differences												
5. The conditions influencing weather.	Consensus		N				I		E			E	
	Desired												
	Current												
	Differences												
6. Earth Science Map construction and interpretation (ie, weather, geologic, stars, etc.)	Consensus		N				I		E			E	
	Desired												
	Current												
	Differences												

TABLE 2 SCIENCE CONTENT AND APPLICATION

Earth Science Topics	Grade	K	1	2	3	4	5	6	7	8	BIOLOGY	CHEMISTRY	PHYSICS
7. The principles of geologic record.	Consensus	N				I			E		R		
	Desired												
	Current												
	Differences												
8. The importance of the water and other mineral cycles.	Consensus	N				I			E		E		
	Desired												
	Current												
	Differences												
	Consensus												
	Desired												
	Current												
	Differences												
	Consensus												
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	Desired												
	Current												
	Differences												
	Consensus												
	Desired												
	Current												
	Differences												

TABLE 2 SCIENCE CONTENT AND APPLICATIONS

General Content Topics	Grade	K	1	2	3	4	5	6	7	8	BIOLOGY	CHEMISTRY	PHYSICS
1. Laboratory equipment, procedures and safety.	Consensus		I				E		E			E	
	Desired												
	Current												
	Differences												
2. Jobs, careers and leisure time.	Consensus		I				E		E			E	
	Desired												
	Current												
	Differences												
3. Changing modes of transportation (motor vehicles, aviation, space, electronics, etc.)	Consensus		N				I		E			E	
	Desired												
	Current												
	Differences												
4. Changing modes of communications (written, visual, electronic, computer, etc.)	Consensus		I				E		E			E	
	Desired												
	Current												
	Differences												
5. Ethics of scientific decisions (death/dying, genetic engineering, transplants, etc.)	Consensus		N				N		I			E	
	Desired												
	Current												
	Differences												
6. Artificial body parts	Consensus		N				N		I			E	
	Desired												
	Current												
	Differences												

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Appendix

Grade Level(s), Subject

MATCHING LOCAL SCIENCE CURRICULUM NEEDS TO
AVAILABLE SCIENCE PROGRAMS

Use the following instrument to compare your local science curriculum needs to available programs being considered. Enter the names of the programs being considered on the diagonal lines at the top of the instrument. Using the Likert Scale below and the criteria on the vertical axis, rate each program by entering the appropriate number in each box. Total points for each column at the bottom of the second page.

0 Total Disagreement — 1 — 2 General Agreement — 3 — 4 Total Agreement

Science Programs Being Assessed:

Assessment Criteria	Example						
Philosophy agrees with that developed in Step #6	2						
Goal: agrees with that developed in Step #6	3						
Subgoal: Addressing Science Processes agrees with that developed in Step #6 Objectives: placement agrees with those developed in Step #7 (use Table 1 to do this comparison)	2						
Subgoal Addressing Science Knowledge agrees with that developed in Step #6 Objectives: placement agrees with those developed in Step #7 (use table 2 to do this comparison)							
Safety is a prime consideration							
Materials encourage critical thinking in students	3						
Student Evaluation Material are provided.	2						
Supplemental instructional materials are available.	1						

Assessment Criteria	Science Programs Being Assessed: Example							
Natural Resources and Environmental Awareness Concepts are included (refer to Code of Iowa, pp. 9)	1							
Math Concepts are included	0							
Health Concepts are included (refer to Code of Iowa, pg. 9)	1							
Reading level is appropriate (refer to Close Technique, Appendix)	2							
Title IX Consistency (refer to Code of Iowa)	1							
Consistent with Multicultural, Nonsexist education requirement (Code of Iowa) 257.25(11) 670-3.5(257), refer to pg. 9)	3							
Materials are cosmetically appealing to teachers, students	3							
Teacher's Edition is helpful	4							
Requires little Inservice	2							
Rarely requires gas, water, electricity, hardware etc.	0							
Materials would stimulate student interest, enjoyment	1							
Career References are available	1							
Material appropriate to intellectural levels of students	3							
Materials presented in logical sequence	2							
Materials are cost effective	0							
Integration with Other Programs Possible	1							
POINT TOTALS	46							

CLOZE PROCEDURE

A method for determining who "can" and "cannot" read your science materials.

Cloze Screening: Directions for construction, administration, scoring and recording, and interpretation of cloze tests.

Construction:

1. Select a reading passage of approximately 275 words from material that you will be assigning to your students. This should be material that they have not yet read.

2. Leave the first sentence intact. Starting with the second sentence, select at random one of the first five words. As you type the passage on a ditto master, leave an underlined blank 15 spaces long.

3. Delete every seventh word for content material such as social studies and science, until you have a total of 50 underlined blanks. Finish that sentence.

Type one more sentence intact.

Administration:

The cloze test can be easily administered by individual teachers within their own classrooms through the following directions:

1. Students are not to use their textbooks in completing the cloze exercise.

2. Before passing out the tests, inform students that they will be taking a test that will try to measure the difficulty of their class reading materials. Show them how the cloze works on the board with sample sentences such as, "It's dark in here. Please turn on the _____." Or, "The man _____ down the stairs." Emphasize to students that they can get many clues from the context of the reading passage that will help them determine words that fit.

3. Allow students the entire class period to complete the test. (Many should finish early.)

Scoring and Recording:

1. Count as correct every exact word students supply. Do not count synonyms judged to be satisfactory. Counting synonyms will not improve the usefulness of the test; the rank order performance of the class will be essentially unchanged and it is sometimes extremely difficult to judge the correctness of a synonym.

2. Multiply the total number of exact word replacements by two in order to determine the student's cloze percentage score.

3. For each class of students, record the cloze percentage scores on a single sheet of paper. Students' names and scores should be listed under one of the three columns as they appear in Appendix A. For each class period, you now have from one to three instructional groups grossly identified.

Appendix A

Scoring - Recording Form

Subject_____

Period_____

Teacher_____

Note: Use your own teacher judgement in interpreting the results below. This in only gross indication, not the final analysis.

Student	Below 35%	Between 35% and 55%	Above 55%
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	"Trouble" (Frustration level)	"Functioning" (Instructional level)	"Easy" (Independent level)